

U.S. Patent Application No. 09/901,190
Amendment dated October 13, 2004
Reply to Office Action of July 15, 2004

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (currently amended): An apparatus for determining an image processing parameter used for detecting an image of an object from a real picked-up image containing the image of the object, said apparatus comprising:

a capture section for capturing the real picked-up image;

a generation section for processing the captured real picked-up image to generate a pseudo image on which change in image pickup conditions relative to the real image is reflected;

a detection section for detecting the image of the object from the pseudo image using an image processing parameter; and

a change section for changing the image processing parameter so that the image of the object is not erroneously detected when said detection section erroneously detects the image of the object from the pseudo image; and

a comparison section for comparing a position of the image of the object contained in the pseudo image detected by said detection section and a reference position of the image of the object; and

wherein said change section changes the image processing parameter so that the position of the image of the object contained in the pseudo image corresponds to the reference position when the position of the image of the object contained in the pseudo image does not correspond to the reference position.

Claim 2 (canceled)

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Claim 3 (original): The apparatus as claimed in claim 1, further comprising:
an input section for inputting the image processing parameter used in said detection section,
wherein said change section changes the image processing parameter automatically without re-input of the image processing parameter.

Claim 4 (original): The apparatus as claimed in claim 1, further comprising:
a first calculation section for calculating a detection error of the image of the object contained in the pseudo image using the image processing parameter,
wherein said change section changes the image processing parameter so that the detection error satisfies a predetermined detection accuracy when the detection error does not satisfy the predetermined detection accuracy.

Claim 5 (original): The apparatus as claimed in claim 1, further comprising:
a second calculation section for calculating the detection processing time required for said detection section to detect the image of the object from the pseudo image using the image processing parameter,
wherein said change section changes the image processing parameter so that the detection processing time satisfies a predetermined reference time when the detection processing time does not satisfy the predetermined reference time.

Claim 6 (currently amended): The apparatus as claimed in claim 1 2, further comprising:

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a second calculation section for calculating the detection processing time required for said detection section to detect the image of the object from the pseudo image using the image processing parameter,

wherein said change section changes the image processing parameter so that the detection processing time satisfies a predetermined reference time when the detection processing time does not satisfy the predetermined reference time.

Claim 7 (currently amended): An apparatus for determining an image processing parameter used for detecting an image of an object from a real picked-up image containing the image of the object, said apparatus comprising:

a capture section for capturing the real picked-up image;

a detection section for detecting the image of the object from the captured real picked-up image using a image processing parameter; and

a change section for changing the image processing parameter so that at least one of a detection error and a detection processing time obtained when the image of the object is detected by said detection section satisfies at least one of a predetermined detection accuracy and a predetermined reference time; and

a comparison section for comparing a position of the image of the object contained in the real picked-up image detected by said detection section and a reference position of the image of the object; and

wherein said change section changes the image processing parameter so that the position of the image of the object contained in the real picked-up image corresponds to the reference position when the position of the image of the object contained in the real picked-up image does

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not correspond to the reference position.

Claim 8 (canceled)

Claim 9 (original): The apparatus as claimed in claim 7, further comprising:

an input section for inputting the image processing parameter used in said detection section,

wherein said change section changes the image processing parameter automatically without re-input of the image processing parameter.

Claim 10 (currently amended): A method for determining an image processing parameter used for detecting an image of an object from a real picked-up image containing the image of the object, said method comprising:

capturing the real picked-up image;

processing the captured real picked-up image to generate a pseudo image on which change in image pickup conditions relative to the real picked-up image is reflected;

detecting the image of the object from the pseudo image using a image processing parameter; and

changing the image processing parameter so that the image of the object is not erroneously detected if the image of the object is erroneously detected from the pseudo image in said detection step; and

comparing a position of the image of the object contained in the pseudo image detected in said detection step and a reference position of the image of the object, and

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wherein said changing of the image processing parameter further comprises changing the image processing parameter so that the position of the image of the object contained in the pseudo image corresponds to the reference position when the position of the image of the object contained in the pseudo image does not correspond to the reference position.

Claim 11 (canceled)

Claim 12 (original): The method as claimed in claim 10, further comprising:
inputting the image processing parameter used in said detection step,
wherein said changing of the image processing parameter further comprises changing the image processing parameter automatically without re-input of the image processing parameter.

Claim 13 (original): The method as claimed in claim 10, further comprising:
calculating a detection error of the image of the object contained in the pseudo image using the image processing parameter,
wherein said changing of the image processing parameter further comprises changing the image processing parameter so that the detection error satisfies a predetermined detection accuracy when the detection error does not satisfy the predetermined detection accuracy.

Claim 14 (original): The method as claimed in claim 10, further comprising:
calculating detection processing time required for said detection step to detect the image of the object from the pseudo image using the image processing parameter,
wherein said changing of the image processing parameter further comprises changing the

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image processing parameter so that the detection processing time satisfies a predetermined reference time when the detection processing time does not satisfy the predetermined reference time.

Claim 15 (currently amended): A method for determining an image processing parameter used for detecting an image of an object from a real picked-up image containing the image of the object, said method comprising:

capturing the real picked-up image;

detecting the image of the object from the captured real picked-up image using an a image processing parameter; ~~and~~

changing the image processing parameter so that at least one of a detection error and a detection processing time obtained when the image of the object is detected in said detection step satisfies at least one of a predetermined detection accuracy and a predetermined reference time; and

comparing a position of the image of the object contained in the real picked-up image detected by said detection step and a reference position of the image of the object; and

wherein said changing of the image processing parameter further comprises changing the image processing parameter so that the position of the image of the object contained in the real picked-up image corresponds to the reference position when the position of the image of the object contained in the real picked-up image does not correspond to the reference position.

Claim 16 (canceled)

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Claim 17 (original): The method as claimed in claim 15, further comprising:

inputting the image processing parameter used in said detection step,

wherein said changing of the image processing parameter further comprises changing the image processing parameter automatically without re-input of the image processing parameter.

Claim 18 (currently amended): A recording medium recording a program for determining an image processing parameter for detecting an image of an object from a real picked-up image containing the image of the object, the program causing a computer to execute the steps of:

capturing the real picked-up image;

processing the captured real picked-up image to generate a pseudo image on which change in image pickup conditions relative to the real picked-up image is reflected;

detecting the image of the object from the pseudo image using an a image processing parameter; and

changing the image processing parameter so that the image of the object is not erroneously detected if the image of the object is erroneously detected from the pseudo image in said detection step; and

calculating detection processing time required for said detection step to detect the image of the object from the pseudo image using the image processing parameter; and

wherein said changing of the image processing parameter further comprises changing the image processing parameter so that the detection processing time satisfies a predetermined reference time when the detection processing time does not satisfy the predetermined reference time.

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Claim 19 (original): The recording medium as claimed in claim 18, wherein the program causes the computer to execute the additional steps of:

calculating a detection error of the image of the object contained in the pseudo image using the image processing parameter,

wherein said changing of the image processing parameter further comprises changing the image processing parameter so that the detection error satisfies a predetermined detection accuracy when the detection error does not satisfy the predetermined detection accuracy.

Claim 20 (canceled)